

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application, as amended, pursuant to and consistent with 37 C.F.R. §1.112, are respectfully requested in light of the remarks which follow.

I. Examiner Interview

Applicant thanks the Examiner and his Supervisor for the interview with Applicant's representative on February 12, 2008, regarding the present invention and proposed claim amendments that may place the application in condition for allowance.

During the interview, the participants discussed amending claim 1 by more specifically defining the "magnetically susceptible particles." The Examiner and his Supervisor agreed that amending the claim to recite that the magnetically susceptible particles comprise "magnetic iron-containing crystals" should be sufficient to overcome the outstanding 35 U.S.C. §§ 102 and 103 rejections over Chang et al., as Chang et al. does not teach or suggest such particles (*see also* the Office Communication (Examiner Interview Summary record) dated March 5, 2008).

In addition, the Examiner and his Supervisor contended that it was not clear how an "exogenic" bioparticle, which by definition appears to be a bioparticle that originates or is derived from outside the biological membrane-enveloped structure, can be extracted using the present method. Accordingly, deleting the phrase "or extraction" from claim 1 was proposed. The Examiner also suggested further clarifying the claimed method by amending claim 1 to include a step for preparing a sample comprising the biological membrane enveloped structures, magnetically susceptible particles, and exogenic bioparticles prior to applying the magnetic alternating field, and by canceling the phrase "and optionally kinetic energy." The Examiner agreed that the optional embodiment could be recited in a new dependent claim. Finally, deleting the terms "temporary" and "specific" from claims 1 and 9, respectively, was discussed. The Examiner and his Supervisor agreed that these amendments should overcome the outstanding indefiniteness rejections under 35 U.S.C. § 112, second paragraph.

The Examiner's helpful comments and suggestions are greatly appreciated. Further to the interview, and in response to the Office Action dated October 16, 2007, Applicant submits the foregoing amendments to the claims.

The amendments to the claims have been made without prejudice or disclaimer to any subject matter canceled or recited herein. Applicant reserves the right to file at least one continuation and/or divisional application directed to any canceled subject matter. No new matter has been added, and entry of the foregoing amendments of the above-identified application are respectfully requested.

II. Claim Rejections Under 35 U.S.C. § 112

Claims 1-4, 7, 9, 10, 12, 13 and 16-19 have been rejected under 35 U.S.C. § 112, second paragraph, as purportedly indefinite for the following reasons.

A. The Examiner has stated that claim 1 is indefinite because the nature of "temporary pores" is not clear.

Claim 1 has been amended by deleting the term "temporary."

B. The Examiner has stated that claim 9 is indefinite because it is not clear what "specific lysis" of biological membrane-enveloped structures means.

Claim 9 has been amended by deleting the term "specific."

Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection.

III. Claim Rejections Under 35 U.S.C. §§ 102 and 103

A. Claims 1, 4, 7 and 10 have been rejected under 35 U.S.C. § 102(b) as purportedly being anticipated by Chang et al. (U.S. Patent No. 4,822,470).

B. Claims 1-4, 7, 9, 10, 12, 13 and 16-19 have been rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Chang et al.

The claims have been amended to recite that the magnetically susceptible particles comprise magnetic iron-containing crystals. Chang et al. do not teach or suggest such particles.

Furthermore, the present methods comprise using a magnetic alternating field. In contrast, the methods disclosed in Chang et al. involve radiofrequency electrical pulses. Chang et al. does not teach or suggest an alternating magnetic field.

Electric fields are created by differences in voltage: the higher the voltage, the stronger the resultant field. Magnetic fields, on the other hand, are created when electric current flows: the greater the current, the stronger the magnetic field. An electric field will

exist even when there is no current flowing. If current does flow, the strength of the magnetic field will vary with power consumption but the electric field strength will be constant. The following table illustrates a number of the fundamental differences between electric and magnetic fields.

i. Electric fields	ii. Magnetic fields
1. Electric fields arise from voltage.	1. Magnetic fields arise from current flows.
2. Their strength is measured in Volts per metre (V/m)	2. Their strength is measured in amperes per meter (A/m). Commonly, EMF investigators use a related measure, flux density (in microtesla (μ T) or millitesla (mT) instead.
3. An electric field can be present even when a device is switched off.	3. Magnetic fields exist as soon as a device is switched on and current flows.
4. Field strength decreases with distance from the source.	4. Field strength decreases with distance from the source.

In the present application, the sample comprises biological membrane enveloped structures (such as cells) along with magnetically susceptible particles and exogenic bioparticles. A magnetic alternating field is applied to the sample, for example by placing the sample in a space within the interior of an electric coil. In such case, current is flowing in the coil surrounding the sample, but there is no applied electrical field. Since the current is coming from alternating directions in and out of the coil, the magnetic field created within the coil has an alternating field direction. The present inventors have surprisingly found that

exposure to the magnetic alternating field warms the magnetically susceptible particles, and may also cause them to vibrate, which in turns generates dislocations in the cell membranes leading to pores or temporary openings in the membrane.

Chang et al. describes a method of electroporation for fusing cells or causing poration of the cells. In contrast to the present invention, the cell sample in the reference method is placed between two electrodes in a high electric field. There is no current running through the cells or anywhere in the space between the two electrodes. (In fact, if there were a current running, the electric field would not be present.) Next, a magnetic field is applied in the space between the two electrodes. The field direction of the electric field is alternated using radio frequency. The external electric field causes a large cell membrane potential, which eventually leads to minor breakdown of the membrane – a poration. Once the cell is removed from the electrical field, the membrane recovers the pore is sealed. The pores described in Chang et al. can be used in cell fusion and for the transport of molecules.

If the sample of the present invention were placed in an electric field, such as the electric field taught in Chang et al., the magnetically susceptible particles would be transported to either the + or – side of the chamber with high speed due to the density and surface charge of the particles, and the cells would be electroporated with or without any magnetically susceptible particles present. Furthermore, if a sample without magnetically susceptible particles, such as the sample of Chang et al., were placed in the magnetic alternating field of the present invention, there would be no poration.

The subject matter of the present claims is clearly not taught or suggested by Chang et al. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103.

CONCLUSION

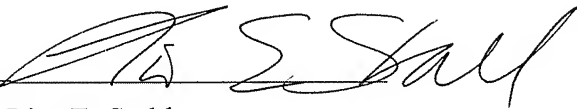
In view of the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order. Such action is earnestly solicited.

In the event that there are any questions relating to this Amendment and Reply, or the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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